

Antifungal Effects of Hydrolysable Tannins and Related Compounds on Dermatophytes, Mould Fungi and Yeasts

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Hydrolysable Tannins, Flavonoids, Antifungal Activity

A series of hydrolysable tannins and related compounds was evaluated for antifungal activities against filamentous fungi (*Epidermophyton floccosum*; *Microsporum canis*; *Microsporum gypseum*; *Trichophyton mentagrophytes*; *Trichophyton rubrum*; *Trichophyton tonsurans*; *Trichophyton terrestre*; *Penicillium italicum*; *Aspergillus fumigatus*; *Mucor racemosus*; *Rhizopus nigricans*) and opportunistic yeasts (*Candida albicans*; *Candida glabrata*; *Candida krusei*; *Cryptococcus neoformans*), using the agar dilution method. While all samples had no activity against the filamentous fungi in concentrations of 1.1–5.9 μM (1000 $\mu\text{g/ml}$), the phenolic compounds displayed significant potencies against all the opportunistic yeasts tested but *C. albicans*, with minimum inhibitory concentrations ranging from 0.02 to 0.1 μM (16–125 $\mu\text{g/ml}$). Although the presence of galloyl groups in flavonoids did not necessarily produce activity, this structural element, an HHDP moiety or its oxidatively modified entity proved to be an important structural feature of hydrolysable tannins. Comparison of dilution methods provided strong evidence of dependence of MIC values on the test method. Employing the microdilution broth method, the ellagitannin corilagin (MIC 0.8 nM) was found to be similarly potentially active as amphotericin B (MIC 0.5 nM) and sertaconazole (MIC 0.9 nM) against *Candida glabrata* strains. The order of effectiveness observed being 64- and 4–8-fold increased for corilagin and the reference compounds respectively, when compared with that of the agar dilution test.